



# ***AL400ULX Series Power Supply/Charger***

## ***Installation Guide***

### ***Models Include:***






- ***AL400ULX***
  - *Single Output*
  
- ***AL400ULPD4***
  - *Four (4) Fused Outputs*
  
- ***AL400ULPD8***
  - *Eight (8) Fused Outputs*
  
- ***AL400ULXPD16***
  - *Sixteen (16) Fused Outputs*
  
- ***AL400ULPD4CB***
  - *Four (4) PTC Outputs*
  
- ***AL400ULPD8CB***
  - *Eight (8) PTC Outputs*
  
- ***AL400ULXPD16CB***
  - *Sixteen (16) PTC Outputs*

***For a red enclosure, add an "R" suffix to the part # e.g. AL400ULPD8R***

### Overview:

The AL400ULX is a power supply that converts a 115VAC / 60Hz input to a 12VDC or 24VDC regulating output (see specifications below). The AL400ULX is the base power supply unit for the UL Listed multi-output power supply/charger series: AL400ULPD4, AL400ULPD4CB, AL400ULPD8, AL400ULPD8CB, AL400ULXPD16, AL400ULXPD16CB (Refer to *AL400ULX Series Power Supply Configuration Reference Chart* below).

### AL400ULX Series Power Supply Configuration Reference Chart:

Altronix Model Number	Accessory Power Distribution Module(s)	Number of Outputs	Fused Outputs	PTC Outputs	12VDC Total Output Current (amp)	24VDC Total Output Current (amp)	Individual Output Rating (amp)	Power Supply Input Fuse Rating	Power Supply Output Fuse Rating	Agency Listings	UL Listings and File Numbers
AL400ULX AL400ULXX AL400ULXR	—	1	—	—	4	3	—	5A/ 250V	15A/ 32V	   	UL File # S4707  UL 294 UL Listed for Access Control System Units.  UL 603 UL Listed Standard for Power Supplies for Use with Burglar-Alarm Systems.
AL400ULPD4	PD4UL	4	x	—	4	3	3.5	5A/ 250V	15A/ 32V		UL 1069 UL Listed Hospital Signaling and Nurse Call Equipment.  UL 1481 UL Listed Standard for Safety for Fire Protective Signaling Systems.  “Signal Equipment” Evaluated to CSA Standard C22.2 No.205-M1983
AL400ULPD4CB	PD4ULCB		—	x			2.5				
AL400ULPD8	PD8UL	8	x	—	3.5	5A/ 250V	15A/ 32V				
AL400ULPD8CB	PD8ULCB		—	x	2.5						
AL400ULXPD16	Two (2) PD8UL	16	x	—	3.5	5A/ 250V	15A/ 32V				
AL400ULXPD16CB	Two (2) PD8ULCB		—	x	2.5						

Do not exceed total output rating of 4 amp @ 12VDC or 3 amp @ 24VDC per unit.

### Specifications:

#### Input:

- Input 115VAC / 60Hz, 3.5 amp.
- AC input and DC output LED indicators.

#### Output:

- Class 2 Rated power-limited output(s).
- 12VDC or 24VDC selectable output.  
Burglar Alarm Applications (UL 603):  
12VDC = 10VDC-13.2VDC.  
24VDC = 20VDC-26.4VDC.
- 4 amp total supply current at 12VDC  
or 3 amp total supply current at 24VDC.
- Filtered and electronically regulated outputs.
- Short circuit and thermal overload protection.
- Output fuse rated at 15A/32V.

#### Battery Backup:

- Built-in charger for sealed lead acid or gel type batteries.
- Automatic switch over to stand-by battery when AC fails.
- Maximum charge current 0.7 amp.
- Zero voltage drop when switched over to battery backup.

#### Supervision:

- AC fail supervision (form “C” contacts).
- Low battery and battery presence supervision (form “C” contacts).

#### Additional Features:

- Power supply, enclosure, cam lock and battery leads.
- All models are available in red enclosure (add an “R” suffix to the part # e.g. AL400ULPD8R).

### Power Supply Output Specifications:

Output	Switch Position
12VDC	SW1 - CLOSED (Fig. 1b)
24VDC	SW1 - OPEN (Fig. 1b)

**Stand-by Specifications** (total current shown):

Output	4 hr. of Stand-by & 5 Minutes of Alarm	24 hr. of Stand-by & 5 Minutes of Alarm	60 hr. of Stand-by & 5 Minutes of Alarm
12VDC / 40AH Battery	Stand-by = 4.0 amp Alarm = 4.0 amp	Stand-by = 1.0 amp Alarm = 4.0 amp	Stand-by = 300mA Alarm = 4.0 amp
24VDC / 12AH Battery	—	Stand-by = 200mA Alarm = 3.0 amp	—
24VDC / 40AH Battery	Stand-by = 3.0 amp Alarm = 3.0 amp	Stand-by = 1.0 amp Alarm = 3.0 amp	Stand-by = 300mA Alarm = 3.0 amp

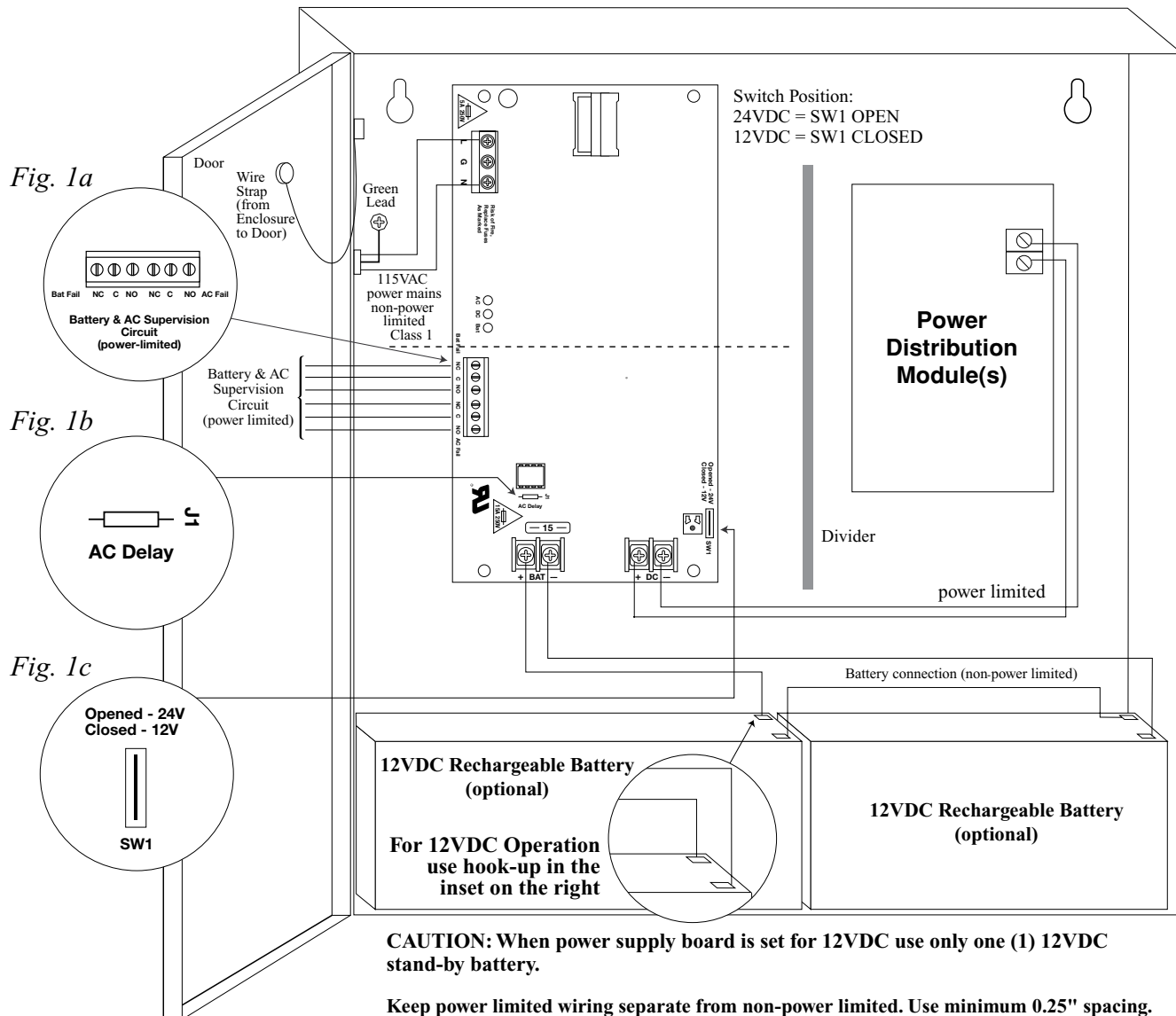
**Installation Instructions:**

Wiring methods shall be in accordance with the National Electrical Code/NFPA 70/NFPA 72/ANSI, and with all local codes and authorities having jurisdiction. Product is intended for indoor use only.

1. Mount unit in the desired location. Mark and predrill holes in the wall to line up with the top two keyholes in the enclosure. Install two upper fasteners and screws in the wall with the screw heads protruding. Place the enclosure's upper keyholes over the two upper screws; level and secure. Mark the position of the lower two holes. Remove the enclosure. Drill the lower holes and install two fasteners. Place the enclosure's upper keyholes over the two upper screws. Install the two lower screws and make sure to tighten all screws (*Enclosure Dimensions*, pg. 7-8).

**CAUTION: De-energize unit prior to servicing. For continued protection against risk of electric shock and fire hazard replace fuse with the same type and rating. Do not expose to rain or moisture.**

Fig. 1



## **Installation Instructions** (cont'd):

- The power supply is pre-wired to the ground (chassis). Connect main incoming ground to the provided green grounding conductor lead. Connect unswitched AC power (115VAC / 60Hz) to the terminals marked [L, N] (Fig. 1, pg. 3). Use 14 AWG or larger for all power connections (Battery, DC output, AC input). Use 22 AWG to 18 AWG for power-limited circuits (AC Fail/Low Battery reporting).  
**Keep power-limited wiring separate from non power-limited wiring (115VAC / 60Hz Input, Battery Wires). Minimum 0.25" spacing must be provided.**  
For Fire Alarm applications the outputs are "Special Applications" only see list (refer to Appendix A, pg. 6).  
For other devices contact Underwriters Laboratories to insure compatibility.
- Set the unit to the desired DC output voltage by setting SW1 (Fig. 1c, pg. 3) to the appropriate position (Power Supply Voltage Output Specifications Chart, pg. 2).
- Measure output voltage before connecting any devices to ensure proper operation. Improper or high voltage will damage these devices. When servicing the unit, AC mains should be removed.
- Connect devices to be powered:
  - For AL400ULX Power Supply: connect devices to the terminals marked [- DC +] (Fig. 1, pg. 3).
  - For other Power Distribution Models: connect devices to be powered to the terminal pairs 1 to 4 marked [1P & 1N through 4P & 4N] (Fig. 2a & 2b, pg. 5) or 1 to 8 marked [1P & 1N through 8P & 8N] (Fig. 3a & 3b, pg. 5), carefully observing correct polarity.
- For Access Control applications batteries are optional. When batteries are not used, a loss of AC will result in the loss of output voltage. When the use of stand-by batteries is desired, they must be lead acid or gel type.
- Connect appropriate signaling notification devices to AC FAIL & BAT FAIL (Fig. 1a, pg. 3) supervisory relay outputs.  
**Note:** When used in fire alarm, burglar alarm or access control applications, "AC Fail" relay should be utilized to visually indicate that AC power is on. To delay report for 6 hours cut "AC Delay" jumper (Fig. 1b, pg. 3).
- Please ensure that the cover is secured with the provided Key Lock.

### **Wiring:**

Use 14 AWG or larger for all power connections.

**Note:** Take care to keep power-limited circuits separate from non power-limited wiring (115VAC, Battery).

### **Maintenance:**

Unit should be tested at least once a year for the proper operation as follows:

**Output Voltage Test:** Under normal load conditions the DC output voltage should be checked for the proper voltage level (Power Supply Voltage Output Specifications Chart, pg. 3).

**Battery Test:** Under normal load conditions check that the battery is fully charged, check specified voltage both at the battery terminal and at the board terminals marked [+ BAT -] to ensure that there is no break in the battery connection wires.

**Note:** Maximum charging current under discharges is 0.7 amp.

**Note:** Expected battery life is 5 years; however, it is recommended changing batteries in 4 years or less if needed.

## **LED Diagnostics:**

### **Power Supply Board**

Red (DC)	Green (AC)	Power Supply Status
ON	ON	Normal operating condition.
ON	OFF	Loss of AC. Stand-by battery supplying power.
OFF	ON	No DC output.
OFF	OFF	Loss of AC. Discharged or no stand-by battery. No DC output.

Red (Bat)	Battery Status
ON	Normal operating condition.
OFF	Battery fail/low battery.

### **Power Distribution Module**

Green (AC)	Power Distribution Module Status
ON	Normal operating condition.
OFF	No Power Output.

## Terminal Identification:

### Power Supply Board

Terminal Legend	Function/Description
L, G, N	Connect 115VAC 60 Hz. to these terminals: L to Hot, N to Neutral. Do not use the [G] terminal.
+ DC -	12VDC @ 4 amp or 24VDC @ 3 amp continuous power-limited output.
AC Fail NC, C, NO	Indicates loss of AC power, e.g. connect to audible device or alarm panel. Relay normally energized when AC power is present. Contact rating 1 amp @ 28VDC. AC or brownout fail is reported within 1 minute of event. To delay reporting of up to 6 hrs., cut "AC delay" jumper and reset power to unit.
Bat Fail NC, C, NO	Indicates low battery condition, e.g. connect to alarm panel. Relay normally energized when DC power is present. Contact rating 1 amp @ 28VDC.
+ BAT -	Stand-by battery connections. Maximum charge current 0.7 amp.

### Power Distribution Module

Terminal Legend PD4UL/PD4ULCB	Terminal Legend PD8UL/PD8ULCB	Function/Description
1P to 4P	1P to 8P	Positive DC power outputs.
1N to 4N	1N to 8N	Negative DC power outputs.

## Power Distribution Module(s):

Fig. 2a

Replace fuses with the same type and rating 3.5A, 250V.

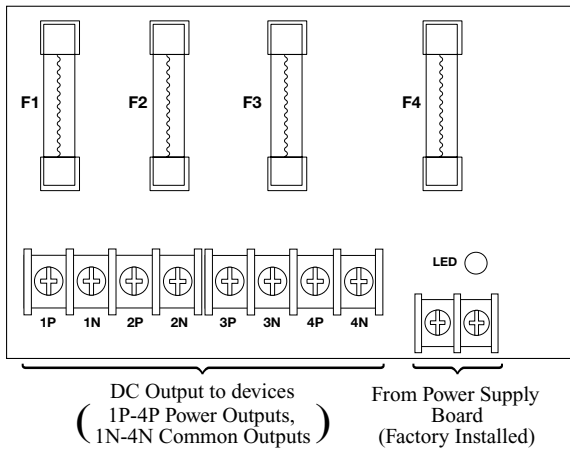


Fig. 2b

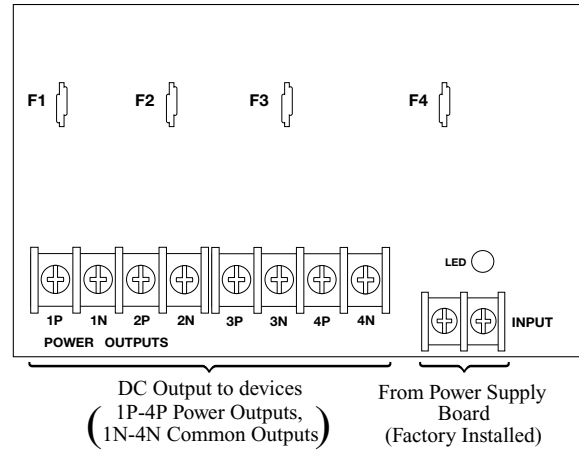


Fig. 3a

Replace fuses with the same type and rating 3.5A, 250V.

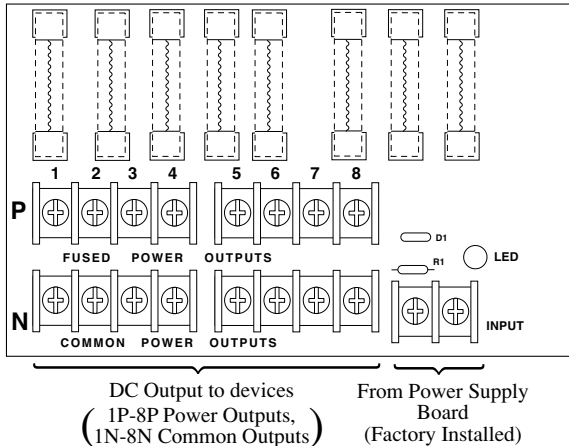
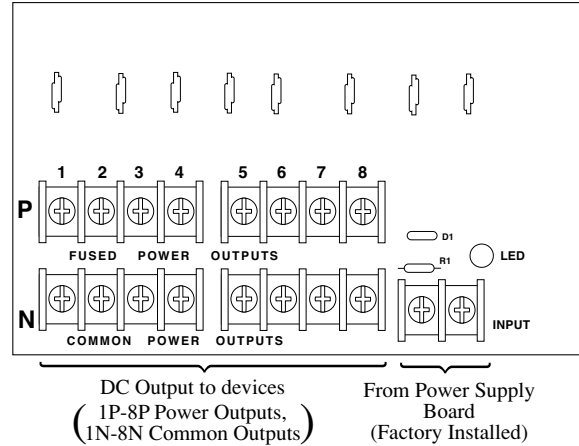


Fig. 3b



## Appendix A - UL Listed Compatible Devices

### A.1 Four (4) Wire Smoke Detectors

Table A-1 below lists four (4) wire smoke detectors compatible with *AL400ULX* output.

System Sensor Smoke Detector/Base	Detector Type	Max Stand-by Current (mA)	Alarm Current (mA)
B112LP	Base	0.12	36
B114LP	Base	*	*
B404B	Base	*	*
DH100ACDC	Photoelectric	0.15	0.70
DH100ACDCLP	Photoelectric	0.15	0.70
DH100ACDCLPW	Photoelectric	0.15	0.70
DH400ACDCI	Ionization Duct	25	95
DH400ACDCP	Photoelectric Duct	25	95
1112/24/D	Ionization	0.05	50
1424	Ionization	0.10	41
1451 (w/B402B Base)	Ionization	0.10	39
2112/24ATR	Photoelectric	0.50	60/70
2112/24AITR	Photoelectric	0.50	60/70
2112/24/D	Photoelectric	0.05	50
2112/24T/D	Photoelectric w/135° Thermal	0.05	50
2112/24TSRB	Photoelectric w/135° Thermal Supervisory Relay	15	45
2312/24TB	Photoelectric	0.12	50
2412 (12 volt)	Photoelectric	0.12	77
2424	Photoelectric	0.10	41
2451	Photoelectric	0.10	39
2451TH (with/B402B Base)	Photoelectric	0.10	39
2W-MOD	Loop Test/Maintenance Mod.	30	50
4W-B (12/24 volt)	Photoelectric I <sup>3</sup>	0.05	23
4WT-B (12/24 volt)	Photoelectric I <sup>3</sup> w/Therm	0.05	23
4WTA-B (12/24 volt)	I <sup>3</sup> Photo w/Therm/Sounder	0.05	35
4WTR-B (12/24 volt)	I <sup>3</sup> Photo w/Therm/Relay	0.05	35
4WITAR-B (12/24 volt)	I <sup>3</sup> Photo w/Isolated Therm/Sounder/Relay	0.05	50
2W-MOD2	I <sup>3</sup> Loop Test/Maintenance Mod.	0.05	*
RRS-MOD	I <sup>3</sup> Reversing Relay/Sync Module	0.05	*
6424	Projected Beam	10	28.4
Beam 1224(S)	Projected Beam	17	38.5

\* Contact manufacturer for current draws.

### A.2 Relays

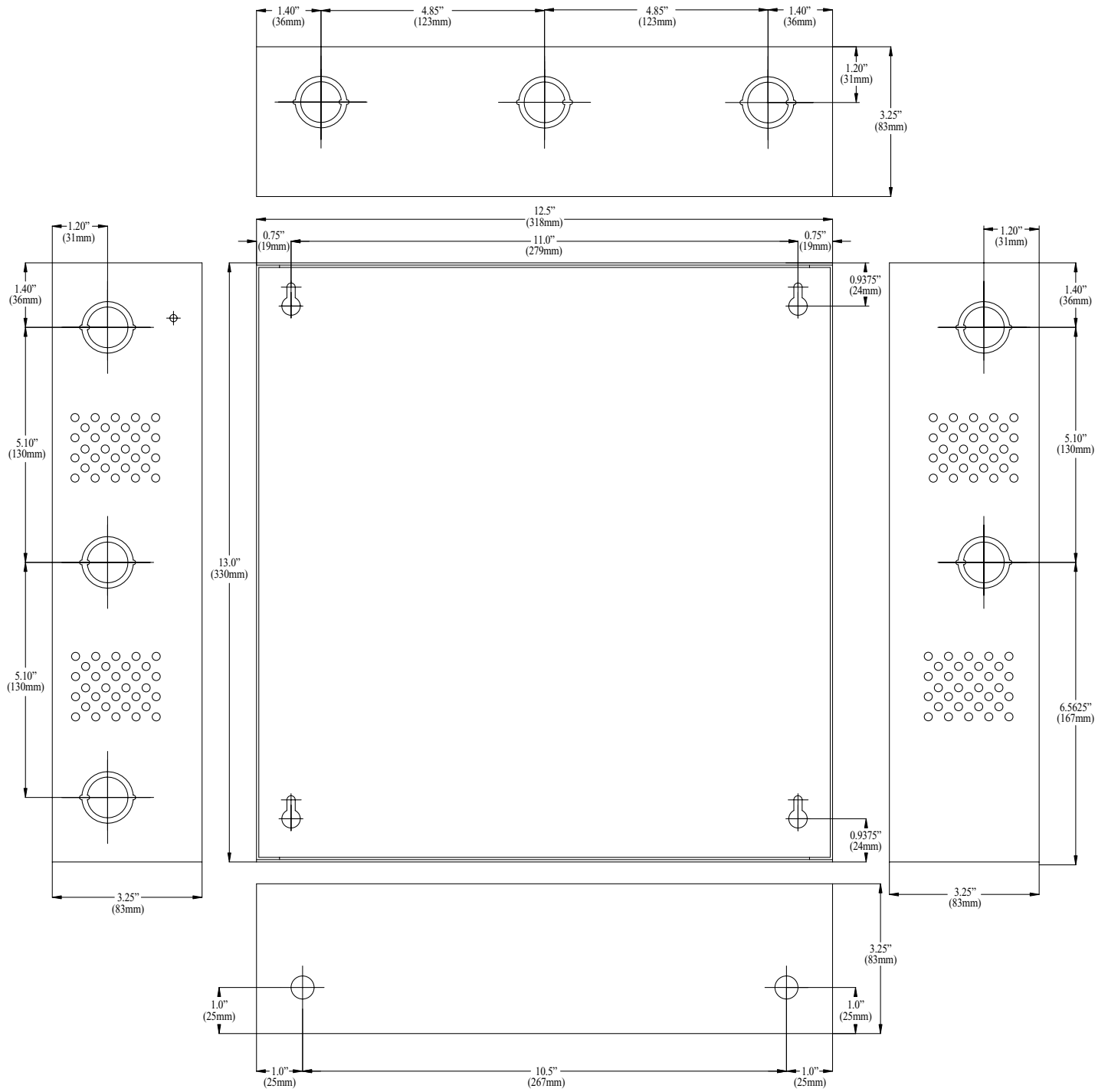
Table A-2 below lists relays compatible with *AL400ULX* output.

Manufacturer	Model	Current (mA)	Manufacturer	Model	Current (mA)
System Sensor	PR-1	15	System Sensor	R-20T	40
	PR-2	30		R-24T	40
	PR-3	30		R-10E	23
	EOLR-1	30		R-14E	23
	R-10T	23		R-20E	40
	R-14T	23		R-24E	40

# Enclosure Dimensions (BC300):

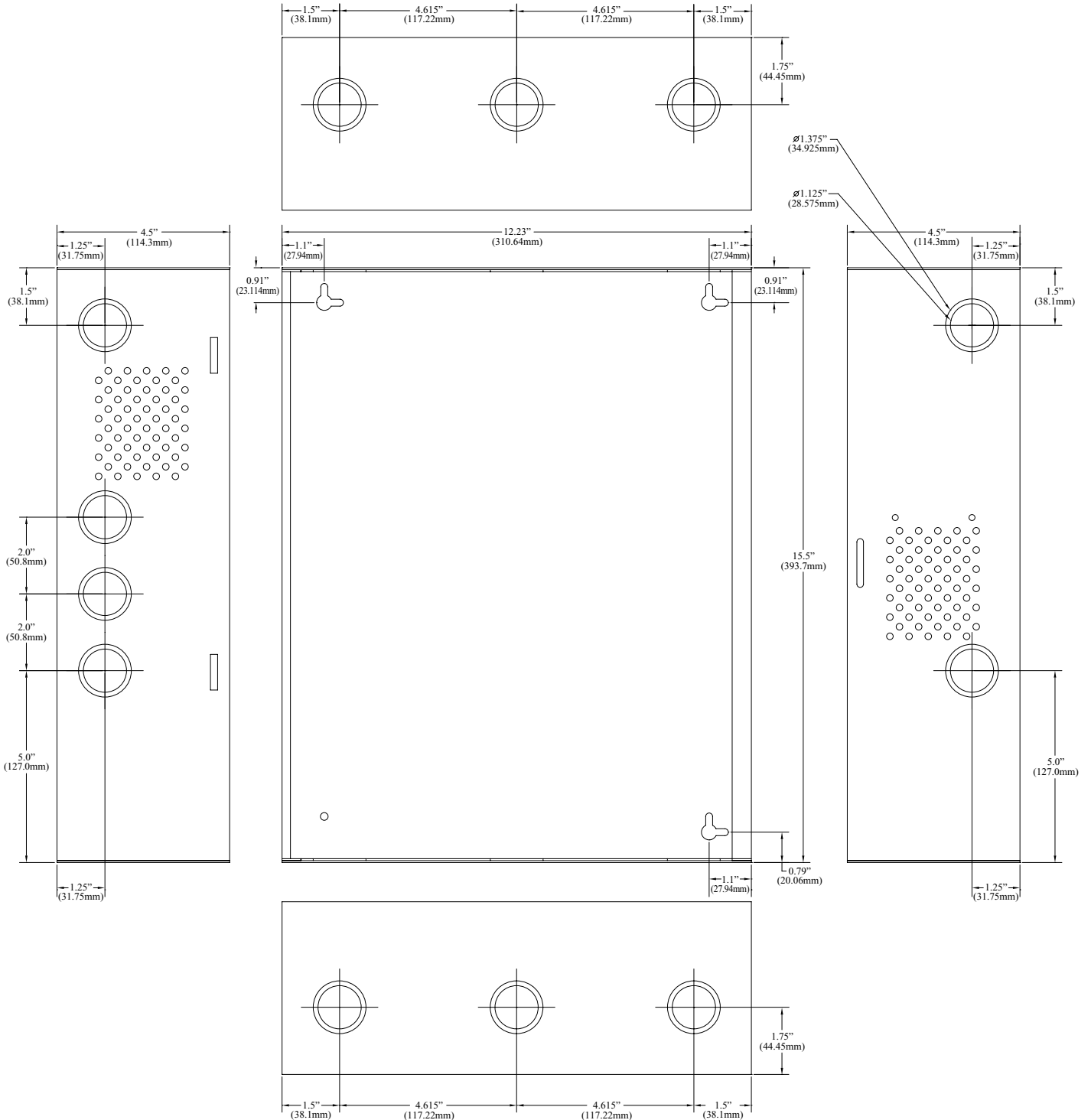
AL400ULX, AL400ULXR, AL400ULPD4, AL400ULPD4CB, AL400ULPD8, AL400ULPD8CB

13.5" x 13" x 3.25" (342.9mm x 330.2mm x 82.55mm)



**Enclosure Dimensions (BC400):**

**AL400ULXX, AL400ULXXR, AL400ULXPD4, AL400ULXPD4CB,  
AL400ULXPD8, AL400ULXPD8CB AL400ULXPD16, AL400ULXPD16CB**  
15.5" x 12" x 4.5" (393.7mm x 304.8mm x 114.3mm)



Altronix is not responsible for any typographical errors.

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